

Date: Monday, 22/10/2007 2:17:22 PM
User: Linda Lacelle

Process Sheet

Split 307.12.12

| | |
|--|---|
| Customer : CU-DAR001 Dart Helicopters Services | Drawing Name : ARM |
| Job Number : 35298 <i>3</i> | |
| Estimate Number : 12884 | |
| P.O. Number : | Part Number : D3560044 |
| This Issue : 22/10/2007 S.O. No. : | Drawing Number : D3560 UNDER REVIEW <i>9/12</i> |
| Prsht Rev. : NC | Project Number : N/A |
| First Issue : / / Type : SMALL / MED FAB | Drawing Revision : C |
| Previous Run : 35032 | Material : |
| Written By : <i>W</i> | Due Date : 29/10/2007 Qty: 14 Um: Each |
| Checked & Approved By : | |
| Comment : Est Rev:A New Issue 07.05.24 EC | |
| Est Rev B ECN 987 07.10.09 EC verified by DD | |

Additional Product

Job Number:



| | | |
|---------|-----------------------|---------------|
| Seq. #: | Machine Or Operation: | Description : |
|---------|-----------------------|---------------|

| | | |
|-----|--------------------|-------------------------|
| 1.0 | M6061T6B0500X05000 | 6061-T6 Bar .50" x 5.0" |
|-----|--------------------|-------------------------|



Comment: Qty: 1.3598 f(s)/Unit Total: 19.0365 f(s)
6061-T6 Bar 0.50" x 5.00"

Batch: *71106132*

| | | |
|-----|----------|----------|
| 2.0 | BAND SAW | BAND SAW |
|-----|----------|----------|



Comment: BAND SAW
Cut blanks 15.500" long

| | | |
|-----|-------|--------------------------------|
| 3.0 | HAAS1 | HAAS CNC VERTICAL MACHINING #1 |
|-----|-------|--------------------------------|



Comment: HAAS CNC VERTICAL MACHINING #1

1- Mill as per Folio FA696 Rev: *W* & Dwg D3560 Rev: *C*

2-C'sink 0.196" hole on manual mill as per dwg D3560

3-Deburr per dwg D3560

| | | |
|-----|-----|--|
| 4.0 | QC2 | INSPECT PARTS AS THEY COME OFF MACHINE |
|-----|-----|--|



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

| | | |
|-----|-----|--------------|
| 5.0 | QC8 | SECOND CHECK |
|-----|-----|--------------|



Comment: SECOND CHECK

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Date: Monday, 22/10/2007 2:17:22 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ARM

Job Number: 35298

Part Number: D3560044

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

D35921

PLATE



Comment: Qty.: 1.0000 Each(s)/Unit Total : 14.0000 Each(s)

PLATE

B41083 ✓

SP

08.09.02

(7R)

7.0

LARGE FAB 1

LARGE FABRICATION RESOURCE 1



Comment: LARGE FABRICATION RESOURCE 1

1-Weld assembly as per dwg D3560

STEP:

- 1- clean material (buff bracket and bottom of arm with blue pad) SP
- 2- set up bracket and arm on jig SP
- 3- preheat bracket and arm with torch SP
- 4- clean before welding with brush SP
- 5- set up machine to 135 amps SP
- 6- weld across bottom and top ends SP
- 7- reheat with torch () SP
- 8- on one side weld from bottom to top half way SP
- 9- same for other side (half way) SP
- 10- from half way point weld the rest of the first side (ease off pedal near end) SP
- 11- same for remaining side (ease off pedal near end) SP

SLIP

(P2) →

(7X)

8.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

9.0

QC9

VISUAL WELDING INSPECTION



Comment: VISUAL WELDING INSPECTION

10.0

HAND FINISHING1

HAND FINISHING RESOURCE #1








Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: D3560-044 PAR #: N/A Fault Category: Prod/PAB. LG NCR: Yes No DQA: D Date: 08/01/15
CAR-08-026 QA: N/C Closed: _____ Date: _____

| NCR: <u>35218</u> | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|-------------------|----------|---|---|--|-----------------------------|--|---|---|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| 8/9/15 | # FID | During welding inspection it was found that 5 parts have cracks from the D3560-1 plate from welding R.C. Grain runs along the weld. |  08/09/15 | Scrap and Destroy 21 5 AS PER Email From David Shephard to Alan Stacker on 8/9/10 @ 1:36pm See CAR 08-026 | 09/08/17 SAD 08/09/11 |  08/01/17 |  08/09/15 |  08/01/15 |
| | | | | | | | |  08/01/15 |
| | | | | | | | | |

NOTE: Date & initial all entries

Date: Monday, 22/10/2007 2:17:22 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ARM

Job Number: 35298

Part Number: D3560044

Job Number:



Seq. #:

Machine Or Operation:

Description :

11.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

12.0

D2808

Spacer



Comment: Qty.: 1.0000 Each(s)/Unit Total : 14.0000 Each(s)
Spacer
batch: _____

13.0

SMALL FAB 1

SMALL & MEDIUM FAB RESOURCE 1



Comment: SMALL & MEDIUM FAB RESOURCE 1

1-Press bushing in D3560 arm per dwg D3562

14.0

QC5

INSPECT WORK TO CURRENT STEP

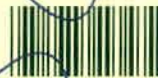


Comment: INSPECT WORK TO CURRENT STEP

15.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1
Identify and Stock
Location: _____

16.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



W 08-09-18

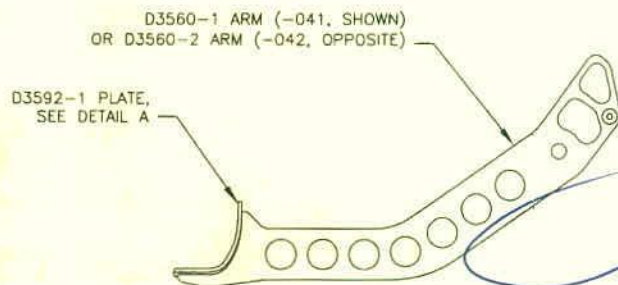
| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

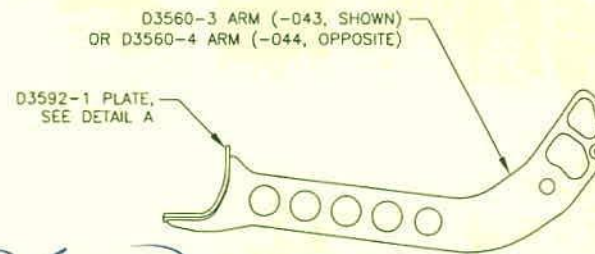
QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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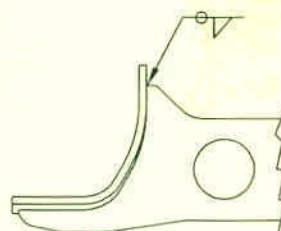
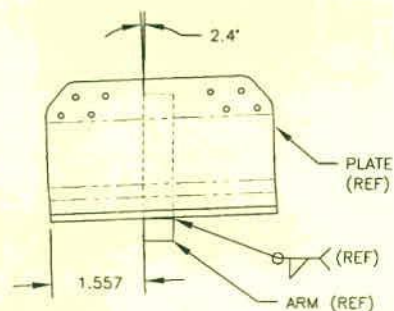
NOTE: Date & initial all entries



D3560-041 ARM WELDMENT (SHOWN),
D3560-042 ARM WELDMENT (OPPOSITE)



D3560-043 ARM WELDMENT (SHOWN),
D3560-044 ARM WELDMENT (OPPOSITE)



DETAIL A
(SCALE 1:1)

GENERAL NOTES

- 1) WELD PER QSI 004
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES

RELEASED
07.06.22
UNDER REVIEW
07.10.22 DC

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| | | |
|---------|----------|--|
| C | 07.06.19 | REMOVE POWDER COAT |
| B | 07.01.15 | REDESIGN AS WELDMENT, ADD POCKETS |
| A | 06.09.25 | NEW ISSUE |
| DESIGN | qf | DRAWN BY qf |
| CHECKED | H | APPROVED H |
| DATE | 07.06.19 | TITLE |
| | | ARM WELDMENT |
| | | DART AEROSPACE LTD. HARRISBURG, ONTARIO, CANADA |
| | | DRAWING NO. D3560 |
| | | REV. C |
| | | SHEET 1 OF 3 |
| | | SCALE 1:4 |

Handwritten: 35298

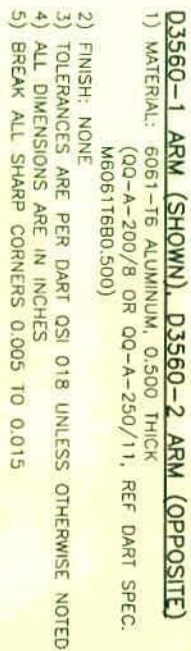
| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

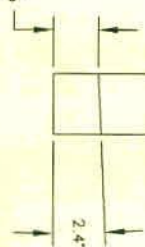
QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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NOTE: Date & initial all entries



SCALE 1:1



RELEASED
07-06-29-H

| | | | | |
|---------|--------------------|-------------|--------------------|---|
| DESIGN | q/c | DRAWN BY | q/c |  DART AEROSPACE LTD. <small>MEMBERSHIP, SERVICES, DEVELOPS</small> |
| CHECKED | <i>[Signature]</i> | APPROVED | <i>[Signature]</i> | |
| DATE | 07.06.19 | DRAWING NO. | D3560 | REV. D. |
| | | TITLE | ARM WELDMENT | SHEET 2 OF 3 |
| | | | | SCALE |
| | | | | 1:2 |

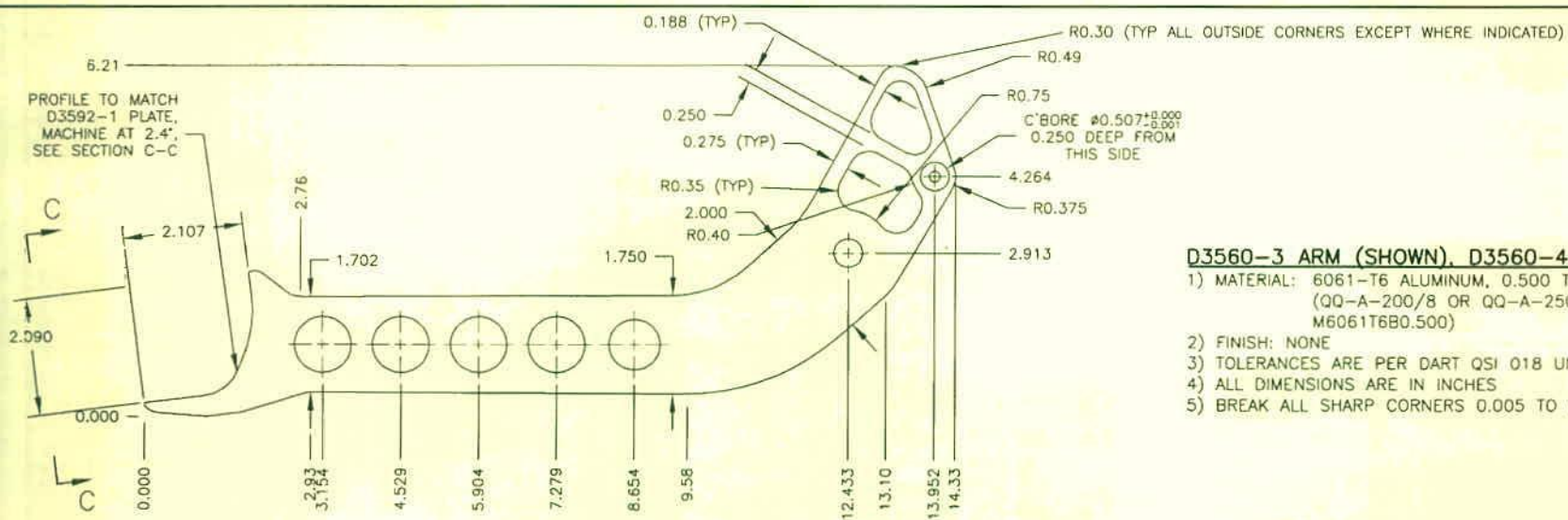
| W/O: | | WORK ORDER CHANGES | | | | | |
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| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

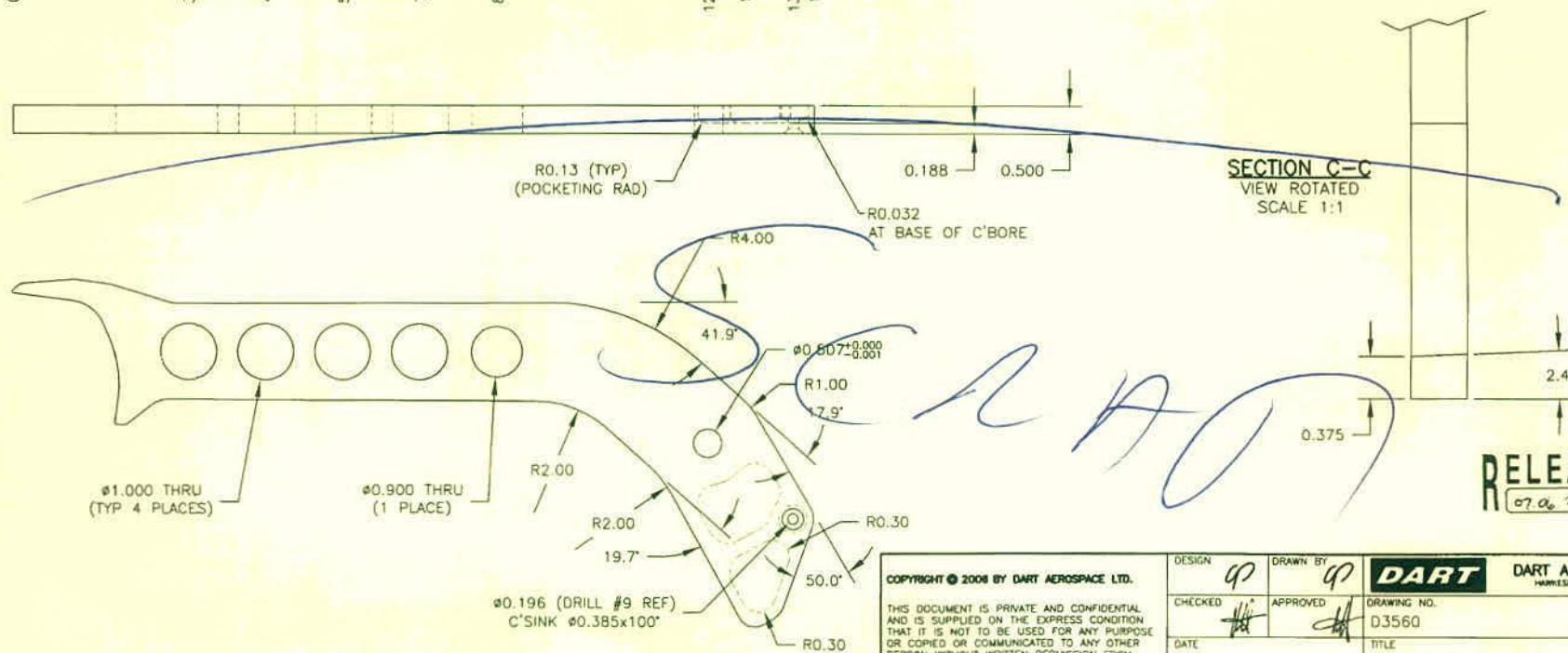
| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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NOTE: Date & initial all entries



D3560-3 ARM (SHOWN), D3560-4 ARM (OPPOSITE)

- 1) MATERIAL: 6061-T6 ALUMINUM, 0.500 THICK
(QQ-A-200/8 OR QQ-A-250/11, REF DART SPEC.
M6061T6B0.500)
- 2) FINISH: NONE
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP CORNERS 0.005 TO 0.015



RELEASED
07.06.19

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|---------|----------|----------|--------------|-------------|--|
| DESIGN | 42 | DRAWN BY | 42 | DART | DART AEROSPACE LTD. HARRISBURG, ONTARIO, CANADA |
| CHECKED | 42 | APPROVED | 42 | DRAWING NO. | D3560 |
| DATE | 07.06.19 | TITLE | ARM WELDMENT | REV. C | SHEET 3 OF 3 |
| | | | | SCALE | 1:2 |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

From: David Shepherd [mailto:dshepherd@dartaero.com]
Sent: September 10, 2008 1:36 PM
To: 'Alan Stocker'
Cc: 'Chris Provencal'; 'Mike Petsche'; 'Bill Beckett'; 'Susanne Sheldon'
Subject: RE: D3560-044 & -042 Cracking

Alan,

Thanks for the pictures.
I am not comfortable with any sort of repair to these parts.
I think that all 14 parts should be scrapped.
And, at the risk of stating the obvious, we need to revisit the manufacturing process of this joint.
My preference, as it was a couple of years ago, is to eliminate this weld.
However, the geometry in that area is a little tricky.
Suggest we generate an NCR or PAR or whatever.

David

From: Alan Stocker [mailto:astocker@dartaero.com]
Sent: Wednesday, September 10, 2008 10:26 AM
To: 'David Shepherd'
Cc: 'Chris Provencal'; 'Mike Petsche'
Subject: D3560-044 & -042 Cracking

Good morning,

We have 13x D3560-044 and 1x D3560-042 that have cracks all but 1 in the same location.
Attached image D3560-044 Crack 1 shows where 13 of the 14 cracks occurred. D3560-044 Crack 2 shows where the other crack occurred. The cracks shown in D3560-044 Crack 1 vary in depth from roughly 3/32 to 1/2 inch. I discussed this with Chris and Peter the consensus opinion is the parts are scrap. Further discussion with Chris indicates that changing grain direction to 45 degree on the sheet metal part may lower the scrap rate but not eliminate it. This has been done on a previous deviation with a less scrap. D3560-044 Crack 2 appears to just be an anomaly.

Please disposition all 14 parts.

Regards,

Alan Stocker
Mechanical Designer

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, Ontario
CANADA K6A 1K7

Phone: 613 632 5200 x 241
FAX : 1 613 632 5246

astocker@dartaero.com

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